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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/416,501	10/08/1999	BRIAN S. DOYLE	42390.P4514D	6248

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EXAMINER

ORTIZ, EDGARDO

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 02/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/416,501

Applicant(s)
Doyle

Examiner
Edgardo Ortiz

Art Unit
2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Nov 25, 2002
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-31, 33, 34, and 37 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-31, 33, 34, and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Oct 8, 1999 is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other: _____

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DETAILED ACTION

This Office Action is in response to an amendment filed November 25, 2002 on which Applicant amended claims 28 and 31, canceled claims 32, 35 and 36 and added new claim 37.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 28-31, 33, 34 and 37 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Yonehara (U.S. Patent No. 6,150,031) in view of Applicant's acknowledged prior art, as shown on figure 2. With regard to Claim 28, Yonehara teaches a first substrate portion (23) having a dielectric (24) on a surface and a second single crystal substrate (22) portion, wherein the dielectric layer of the first substrate portion is bonded directly to the second substrate portion. See figure 1C.

However, Yonehara fails to show active devices formed on the second single crystal substrate portion and wherein selected ones of the active devices of the second substrate portion are intercoupled via metal lines. Applicant's admitted prior art figure 2 teaches a primary substrate

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(202) having a first level of active devices (204) formed thereon and defining a device surface and at least a secondary substrate (Si) coupled to the device surface and selected active devices are intercoupled via metal lines (207). See also page 3, lines 14-27 of Applicant's specification.

Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Yonehara to include active devices formed on the second single crystal substrate portion and wherein selected ones of the active devices of the second substrate portion are intercoupled via metal lines, as clearly suggested by Applicant's admitted prior art, in order to improve the integration and bonding of semiconductor layers including transistors.

With regard to Claim 29, a further difference between Yonehara and the claimed invention is, a plurality of devices formed on the first substrate portion. Applicant's admitted prior art figure 2 teaches a primary substrate (202) having a first level of devices (204) formed thereon and defining a device surface. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Yonehara to include a plurality of devices formed on the first substrate portion, see page 3, lines 14-27 and page 4, lines 1-11 of Applicant's specification, in order to improve integration of semiconductor devices, such as transistors, into a single substrate layer.

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With regard to Claim 30, a further difference between the claimed invention and Yonehara is, selected ones of the devices of the first substrate portion and selected ones of the devices of the second substrate portion that are interconnected. Applicant's admitted prior art figure 2 teaches selected ones of the first level of devices (204) of the primary substrate (202) and selected ones of the devices (208) of the secondary substrate (Si) that are interconnected. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Yonehara to include selected ones of the devices of the first substrate portion and selected ones of the devices of the second substrate portion that are interconnected, in order to improve the integration and bonding of semiconductor layers including transistors.

With regard to Claim 31, Yonehara teaches a primary substrate (23) and at least a secondary single crystal substrate (22) coupled to the primary substrate.

However, Yonehara fails to teach devices formed on the primary substrate and the secondary substrate, wherein device surfaces of the primary and secondary substrates are connected directly such that selected active devices of the secondary single crystal substrate intercoupled via metal lines to selected ones of the first level of devices of the primary substrate. Applicant's admitted prior art figure 2 teaches a primary substrate (202) having a first level of active devices (204) formed thereon and defining a device surface and at least a secondary substrate (Si) coupled to

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the device surface and having a layer (206) which contains active devices (208), wherein selected active devices (204) on the primary substrate are intercoupled via metal lines (207). Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Yonehara to include devices formed on the primary substrate and the secondary substrate and wherein device surfaces of the primary and secondary substrates are connected directly such that selected active devices of the secondary single crystal substrate intercoupled via metal lines to selected ones of the first level of devices of the primary substrate, as clearly suggested by Applicant's admitted prior art, in order to improve the integration and bonding of semiconductor layers including transistors.

With regard to Claims 33 and 34, Yonehara teaches a substrate (22) which is made of single crystal silicon and which, as shown on figure 1C, can have a dielectric layer (24) deposited over the layer. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to provide the first or primary substrate as a single crystal silicon layer, in order to maintain uniform crystallinity between the two bonded substrates.

With regard to Claim 37, the claim contains the limitation "the first substrate portion formed of less than an entire portion of a starting material by demarcating a film thickness through ion implantation into the starting material and separating the first substrate portion from the starting material". It is noted that this is a product by process limitation. A "product by process" claim is

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directed to the product per se, no matter how actually made, In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Response to Arguments

2. Applicant's arguments with respect to claims 28-31, 33, 34 and 37 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Edgardo Ortiz (Art Unit 2815), whose telephone number is (703) 308-6183 or by fax at (703) 308-7722. In case the Examiner can not be reached, you might call Supervisor Eddie Lee at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 receptionist whose telephone number is (703) 308-0956.

EO/AU 2815

2/4/03



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